Restricted Circulation

This paper is not an official document; it is for information only and must not be quoted in any printed publication.

AGRICULTURAL MEMORANDUM NO 593

WEATHER AND ENGLISH BARLEY YIELDS

L P Smith

The analysis of National Barley Yields was carried out, as in Agricultural Memorandum No 592 for wheat, using national mean potential transpirations for June and July (U and Y). There was a positive partial correlation for July (0.79) and a negative one for June (-0.49), the improvement factor again being dominant (0.89). Equations were

$$\text{Yield} = 0.61\,n + 2.67\,Y + 9.6 \quad \text{and} \qquad (1)$$
$$0.59\,n + 2.87\,Y - 0.87\,U + 12.1 \qquad (2)$$

Extrapolation into the 1960s was slightly better than for wheat, but again 1962 gave anomalous results.

These two memoranda suggest that in recent years disease has become a more important yield factor and that the yield records cannot be regarded as homogeneous. The reports for 1962 which had outstanding cereal yields, and mediocre weather, must be regarded with suspicion.

Year	English Barley Yield	Pot. Transpiration		Estimated Yields	
		June	July	(1)	(2)
1950	19.0	4.25	3.75	19.6	19.2
1951	20.2	3.90	3.90	20.6	20.5
1952	19.9	3.70	3.75	20.8	20.8
1953	22.6	3.20	3.75	21.4	21.9
1954	21.4	3.00	3.25	20.7	21.2
1955	25.4	3.35	4.30	24.1	24.5
1956	23.8	3.00	3.45	22.5	22.9
1957	22.3	4.50	3.25	22.5	21.6
1958	22.8	3.00	3.55	24.0	24.4
1959	26.1	4.00	4.30	26.6	26.3

Extrapolating with formula 1.

	Actual	Estimate
1960	25.0	24.5
1961	26.1	25.6
1962	29.0	25.3
1963	28.3	27.5
1964	29.4	28.4
1965	30.0	26.8
1966	28.2	28.6
1967	29.9	30.5
1968	27.2	29.4
1969	28.4	31.7

FCH1

Must not be quoted

Even if we assume that the improvement factor has not been maintained, and this is reasonable, the yields in 1968 and 1969 do suggest an increased influence of disease.

Any comments or suggestions on this paper should be referred to the author.

January 1974

Meteorological Office
Bracknell